

**AMENDMENTS TO THE CLAIMS**

1. (Previously Presented) A hydration monitor comprising a temperature sensor for measuring a subject's core body temperature and a processor, the processor being arranged to accept measurements from the temperature sensor and calculate a hydration level in dependence on changes in the measured core body temperature.

2. (Previously Presented) A hydration monitor as claimed in claim 1, comprising an earpiece worn on the ear and a remote unit, the temperature sensor being positioned in the earpiece for measuring the core body temperature via the subject's tympanic membrane.

3. (Original) A hydration monitor as claimed in claim 2, wherein the temperature sensor comprises a thermopile.

4. (Previously Presented) A hydration monitor as claimed in claim 2, wherein the earpiece further comprises a transmitter, the remote unit including the processor, output means and a receiver, the earpiece being arranged to communicate measurements to the processor via the transmitter and receiver, the processor being arranged to provide an indication of the hydration level via the output means.

5. (Previously Presented) A hydration monitor as claimed in claim 4, wherein the transmitter and receiver communicate wirelessly.

6. (Previously Presented) A hydration monitor as claimed in claim 4, wherein the transmitter and receiver are transceivers.

7. (Previously Presented) A hydration monitor as claimed in claim 4, wherein the remote unit comprises a selected one of: a wristwatch, a personal digital organiser, a mobile telephone, a personal computer or medical diagnostic and/or monitoring apparatus.

8. (Previously Presented) A hydration monitor as claimed in claim 4, wherein the output means includes one or more of a display and a speaker.

9. (Previously Presented) A hydration monitor as claimed in claim 1, further comprising a memory for storing hydration level and/or core body temperature over time.

10. (Currently Amended) A hydration monitor as claimed in claim 1, wherein the processor is arranged to determine a hydration level by the following formula: 
$$\frac{[(\text{core body temperature current} - \text{core body temperature normal}) \times \text{subject's weight}]}{(\text{a value between } 0.1^{\circ}\text{C and } 0.23^{\circ}\text{C factor of ambient compensation} \times 100)}.$$

11. (Canceled)

12. (Previously Presented) A hydration monitor as claimed in claim 1 arranged to operate repeatedly at predetermined time intervals.

13. (Previously Presented) A hydration monitor as claimed in claim 1, wherein the processor is arranged to generate an alarm upon determination of a hydration level below a predetermined level.

14. (Currently Amended) A method of measuring hydration of a subject wherein the following steps are performed with a hydration monitor having a processor:

- a. measuring an initial core body temperature of the subject;
- b. measuring a subsequent current core body temperature of the subject;
- c. subtracting the initial core body temperature from the subsequent core body temperature, thereby obtaining a difference;
- d. multiplying the difference by the subject's weight using the processor, thereby obtaining a multiplied difference;
- e. dividing the multiplied difference by a value between 0.1°C and 0.23°C ~~factor of ambient compensation~~, thereby obtaining an indication of the subject's hydration level;

f. providing output indicative of the subject's hydration level from the hydration monitor to the subject.

15. (Original) A method as claimed in claim 14, wherein the measurements are taken from the subject's tympanic membrane.

16-25. (Canceled)

26. (Previously Presented) A portable hydration monitor including:

a. a wearable temperature sensor having:

(1) an earpiece worn on the ear for measuring a subject's core body temperature via the subject's tympanic membrane, and

(2) a transmitter configured to communicate said measured core body temperature; and

b. a remote unit to be carried or worn by the subject and including a receiver, a processor, and an output device wherein:

(1) the receiver is configured to receive the communicated core body temperature from the transmitter and communicate the received core body temperature to the processor,

(2) the processor is configured to:

i. calculate the subject's hydration level from the measured core body temperature in substantially real time, and

ii. cause an indication of the hydration level to be output via the output device.

27. (Previously Presented) The portable hydration monitor of claim 26, wherein the earpiece includes one or more channels to allow ambient air to flow around the subject's ear canal.

28. (Previously Presented) The portable hydration monitor of claim 26, wherein the earpiece includes a sound generator, the portable hydration monitor being arranged to cause the sound

generator to sound an alarm when the calculated hydration level is below a predetermined threshold.